

surfaces of the first and second shells comprising a material compatible with body fluids;

a battery enclosure comprising a cover and all or a portion of the first shell of the housing assembly, the cover of the battery enclosure disposed between the inner surfaces of the first and second shells, wherein said cover has a greater thickness dimension or a higher modulus of elasticity than the first shell and an insulated electrical conductor sealingly coupled therethrough;

an electrochemical battery cell including an anode member, a cathode pellet and a liquid electrolyte disposed in the battery enclosure;

an operable electronic circuit electrically coupled to the electrochemical battery cell, electrically coupled to a medical electrical lead, and wherein said operable electronic circuit is mechanically coupled between the inner surface of the second shell and the cover of the battery enclosure and a majority of the operable electronic circuit is coupled to a deformable, flexible circuit substrate; and

a hermetic seal isolating the battery enclosure.

Claims 2-13 are cancelled.

14. (Amended) A selectively deformable housing assembly for an implantable medical device, comprising:

a housing comprising a first shell and a second shell, the first and second shells comprising an inner surface and an outer surface, respectively, the outer surfaces of the first and second shells comprising a material compatible with body fluids, the first shell comprising a substantially straight peripheral wall portion;

a battery enclosure comprising a cover and all or a portion of the first shell of the housing assembly, the cover of the battery enclosure disposed between the inner surfaces of the first and second shells, wherein said cover comprises a coined edge and has a greater thickness dimension or a higher modulus of elasticity than the first shell, and an insulated electrical conductor sealingly coupled therethrough;

an electrochemical battery cell including an anode member, a cathode pellet and a liquid electrolyte disposed in the battery enclosure;
an operable electronic circuit electrically coupled to the electrochemical battery cell, electrically coupled to a medical electrical lead, and wherein said operable electronic circuit is mechanically coupled between the inner surface of the second shell and the cover of the battery enclosure and a majority of the operable electronic circuit is coupled to a deformable, flexible circuit substrate; and
a hermetic seal comprising a butt weld joint between the coined edge of the cover and the substantially straight peripheral wall portion of the first shell.

Claims 15-16 are cancelled.

17. (Amended) A selectively deformable housing assembly for an implantable medical device, comprising:

a housing comprising a first shell and a second shell, the first and second shells comprising an inner surface and an outer surface, respectively, the outer surfaces of the first and second shells comprising a material compatible with body fluids, the first shell comprising a spanned edge;
a battery enclosure comprising a cover and all or a portion of the first shell of the housing assembly, the cover of the battery enclosure disposed between the inner surfaces of the first and second shells, wherein the cover comprises a peripheral edge and has a greater thickness dimension or a higher modulus of elasticity than the first shell, and an insulated electrical conductor sealingly coupled therethrough;
an electrochemical battery cell including an anode member, a cathode pellet and a liquid electrolyte disposed in the battery enclosure;
an operable electronic circuit electrically coupled to the electrochemical battery cell, electrically coupled to a medical electrical lead, and wherein said operable electronic circuit is mechanically coupled between the inner surface of the second shell and the cover of the battery enclosure and a

majority of the operable electronic circuit is coupled to a deformable, flexible circuit substrate; and

a hermetic seal comprising a spunk weld joint between the peripheral edge of the cover and the spanked edge of the first shell.

Cancel claims 18 and 19

20. (Amended) The deformable housing assembly of claim 17, wherein the first shell further comprises a first substantially straight peripheral wall portion and a second substantially straight peripheral wall portion adjacent the first substantially straight peripheral wall portion and being offset relative to the first substantially straight peripheral wall portion, the first substantially peripheral wall portion defining a ledge which the peripheral edge of the cover engages.

Cancel claims 21 - 24

25. (Amended) A selectively deformable housing assembly for an implantable medical device, comprising:

a housing comprising a first shell and a second shell, the first and second shells comprising an inner surface and an outer surface, respectively, the outer surfaces of the first and second shells comprising a material compatible with body fluids, the first shell comprising a first substantially straight peripheral wall portion and a second substantially straight peripheral wall portion adjacent the first substantially straight peripheral wall portion and being offset relative to the first substantially straight peripheral wall portion;

a battery enclosure comprising a cover and all or a portion of the first shell of the housing assembly, the cover of the battery enclosure disposed between the inner surfaces of the first and second shells, wherein the cover comprises a substantially straight peripheral wall portion and has a greater

thickness dimension or a higher modulus of elasticity than the first shell,
and an insulated electrical conductor sealingly coupled therethrough;
an electrochemical battery cell including an anode member, a cathode pellet and
a liquid electrolyte disposed in the battery enclosure;
an operable electronic circuit electrically coupled to the electrochemical battery
cell, electrically coupled to a medical electrical lead, and wherein said
operable electronic circuit is mechanically coupled between the inner
surface of the second shell and the cover of the battery enclosure and a
majority of the operable electronic circuit is coupled to a deformable,
flexible circuit substrate; and
a hermetic seal comprising a standing edge weld joint between the substantially
straight peripheral wall portion of the cover and either the first or the
second substantially straight peripheral wall portions of the first shell.

Cancel claims 26-27.

28. (New) The deformable housing assembly of claim 1, wherein the thickness
dimension of the cover is approximately double the thickness of the first shell.

29. (New) The deformable housing assembly of claim 1, wherein the modulus of
elasticity of the cover is at least twenty percent greater than the modulus of
elasticity of the first shell.

30. (New) The deformable housing assembly of claim 1, wherein the first and
second shells are fabricated from surgical Grade I Titanium.

31. (New) The deformable housing assembly of claim 30, wherein the
electrochemical battery cell further includes a lithium anode, a cathode pellet with
Li/CSVO/CF_x chemistry and a liquid electrolyte of type 1M LiBF₄ in GBL/DME.

32. (New) The deformable housing assembly of claim 31, wherein the liquid electrolyte is type 1 N Li AsF₆ in PC/DME with Li/CSOV chemistry.

33. (New) The deformable housing assembly of claim 32, wherein the liquid electrolyte is a one of the following: Li/MnO₂, Li/SVO, Li/CF_x, or Li/SVO-CF_x.

34. (New) The deformable housing assembly of claim 1, further including a feedthrough assembly coupling the battery enclosure to the operable electronic circuit, the feedthrough assembly disposed in a hermetically sealed aperture of the cover and further including a ferrule and a feedthrough pin electrically isolated from each other by a sealing glass.

35. (New) The deformable housing assembly of claim 34, wherein the feedthrough pin is constructed from a one of the following materials: Nb, Ni, Ti, Mo, or Ta; wherein the sealing glass is a one of the following: 9013 glass, CABAL-12, or Ta-23 glass; and wherein the ferrule is constructed from a one of the following materials: MP-35N, 304L stainless steel, titanium 6-4, or any other suitable ferrule material for organic electrolyte lithium batteries.

36. (New) The deformable housing assembly of claim 1, further comprising: an antenna coupled to the deformable, flexible substrate.

37. (New) The deformable housing assembly of claim 36, wherein the antenna is embedded into the deformable, flexible substrate.

38. (New) The deformable housing assembly of claim 1, wherein the implantable medical device is one of the following: a pacemaker, a monitoring device, a nerve stimulator, a pacemaker/cardioverter/defibrillator, an implantable

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cardioverter/defibrillator, or any other implantable medical device which utilizes a battery.

12
39. (New) The deformable housing assembly of claim 1, wherein the cover has regions of different elevation and at least one of the regions defines a recessed region between the cover and the second shell.

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40. (New) The deformable housing assembly of claim 1, wherein the battery enclosure has a maximum thickness of approximately .135 inches.

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41. (New) The deformable housing assembly of claim 1, wherein the housing is further defined by a perimeter, the perimeter having a significant portion curvilinear.

42. (New) A method for assembling a battery into a housing assembly for an implantable medical device, comprising:
providing a shallow drawn case;
providing a battery cover having a greater thickness dimension or a higher modulus of elasticity than the case;
coupling a cathode to the cover;
glassing a feedthrough assembly having a feedthrough tube disposed within a ferrule to electrically isolate the feedthrough tube from the ferrule and to bond the feedthrough tube to the ferrule;
hermetically sealing the ferrule of the feedthrough assembly to the cover;
coupling a feedthrough pin to an anode current collector;
placing an insulator tube around the feedthrough pin;
placing the cover over the anode current collector while directing the feedthrough pin through the feedthrough tube;
coupling the feedthrough pin to the feedthrough tube; and
hermetically sealing the cover to the case.

43. (New) The method of claim 42, wherein the step of glassing the feedthrough assembly is further defined by including an insulator cylinder disposed between a portion of the feedthrough pin and a portion of the ferrule.

44. (New) The method of claim 43, wherein the insulator cylinder is fabricated from an alumina ceramic.

45. (New) The method of claim 44, wherein the step of placing the cover over the anode current collector is further defined by sliding the insulator tube into the insulator cylinder.

46. (New) The method of claim 45, wherein the insulator tube is fabricated from a polyolefin.

47. (New) The method of claim 42, wherein the case is fabricated from surgical Grade I Titanium, the feedthrough pin is fabricated from Nb, and the cathode is comprised of a pellet with Li/CSVO/CF_x chemistry.

48. (New) The method of claim 42, wherein the step of coupling the feedthrough pin to the feedthrough tube includes welding.

49. (New) The method of claim 42, wherein the step of hermetically sealing the cover to the case includes welding.

REMARKS

Claims 2-13, 15, 16, 18, 19, 21-24, 26, and 27 are cancelled and claims 1, 14, 17, 20, and 25 are amended. New claims 28-49 are submitted herewith for examination.

No new matter has been added as a result of these amendments. The following remarks are respectfully submitted.